INTEGRATED STEREO AMPLIFIER

# SA-9900

## OPERATING INSTRUCTIONS

KCU

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

PIONEER

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# FEATURES

### Superior DC Balanced Circuitry

Differential amplifier circuits are employed in the equalizer, tone control, and power amplifier sections. Each amplifier section is supplied by a balanced power supply system that assures excellent DC balance and stability, while nearly eliminating switching noise during control operation.

### High Power Output at Low Distortion

DC stability is enhanced by the 2-stage differential amplifier and pure complementary OCL circuits are employed for direct coupling of all stages. Constant current load circuits are used in 2 locations and a large negative feedback is applied due to the high gain circuit composition. A wide-band high power output can be obtained with broad dynamic range and low distortion.

### Precise RIAA Equalization

Ultra-precision grade metalized film resistors (sputtering process) and styrene capacitors are combined as equalized elements. Deviation from the RIAA curve has been reduced by ±0.2dB in the frequency range of 30Hz ~ 15kHz. An FET is employed in the 1st stage differential amplifier and by adopting a 3-stage direct coupled SEPP circuit, input impedance variation due to frequency is minimized. High stability is attained at low distortion, in addition to a greatly expanded acceptable input level. Distortionless disc reproduction can therefore by enjoyed, even with a high output cartridge and a dynamic music source containing large peak inputs.

### Delicate Tone Adjustments

The Pioneer developed twin tone control circuit is applied to the conventional Bass and Treble controls. Super-low and super-high bands can be individually adjusted to provide delicate compensation for such factors as room acoustics and speaker and cartridge frequency characteristics. A Tone switch is also provided which can be used to compare the effectiveness of the tone controls.

### Reliable Electronic Protection Circuit

In event of speaker shorting or malfunction in which DC is applied to the output, speakers and transistors are reliably guarded by an electronic protection circuit. This circuit also acts as a muting circuit when the power switch is turned on and off.

### Accurate Volume Control Expands Adjustment Range

The Volume control is equipped with a precision attenuator of the type employed in measuring instruments and other high reliability equipment. Volume adjustment can be easily performed when listening at low volume levels, temporarily reducing the volume, or employing a low input level (high gain) power amplifier. The volume adjustment range can also be expanded by employing the volume control and attenuator switch in combination.

### Phono 2 Jacks Provided with Impedance Selector & Level Control

A convenient impedance selector switch (35kΩ, 50kΩ, 70kΩ, 100kΩ) and level control (0 ~ -12dB) are provided for the PHONO 2 jacks for matching cartridge output characteristics, comparison listening, etc.

### Tape Switch for Easy Tape Duplication

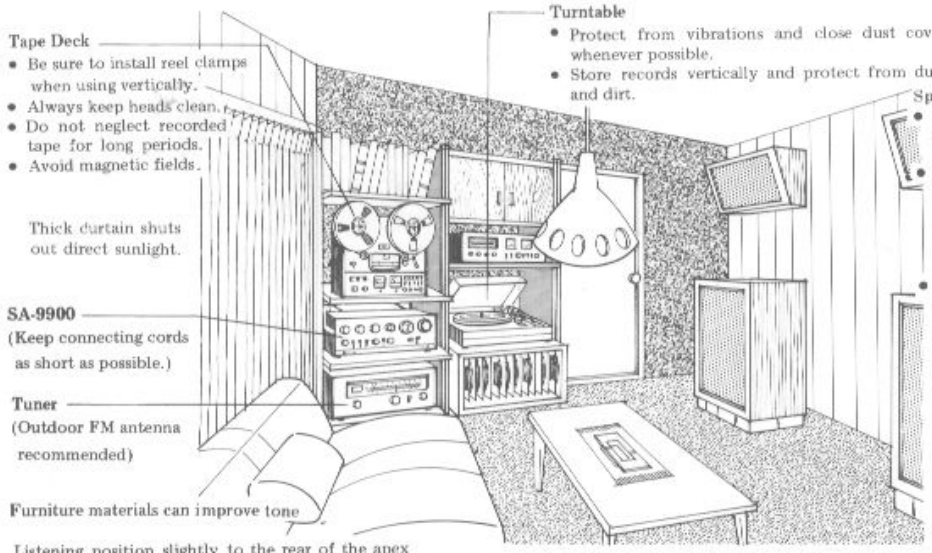
By connecting 2 tape decks, the desired program only from a previously recorded tape can be edited and re-recorded. The Duplicate switch also lets open reel tape be duplicated onto cassette tape.

### Audiophile Functions Incorporated

A PRE/POWER AMP selector switch plus PRE OUT and POWER IN jacks are included. An external power amplifier can be connected to the PRE OUT jacks to allow listening comparison and power amplification. This feature can also be employed for composing a multi-amplifier or 4 channel system. A single SA-9900 can thus be used to set up various kinds of audio systems.

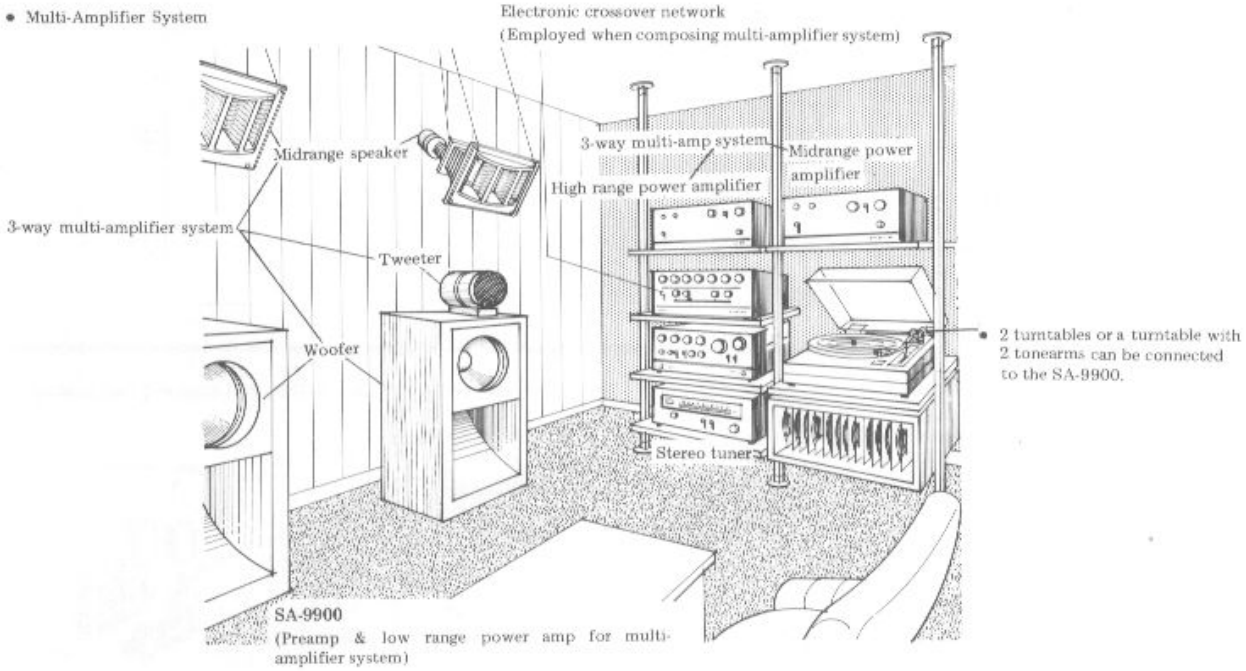
# STEREO SYSTEM COMPOSITION

- Do not place equipment in locations that are unlevel or subject to vibration.
- Allow for good rear panel ventilation of components; avoid humidity and dust.
- Keep equipment away from radiators or other heat sources.


Tape Deck
• Be sure to install reel clamps when using vertically.
• Always keep heads clean.
• Do not neglect recorded tape for long periods.
• Avoid magnetic fields.
Thick curtain shuts out direct sunlight.
SA-9900
(Keep connecting cords as short as possible.)
Tuner
(Outdoor FM antenna recommended)
Furniture materials can improve tone
Listening position slightly to the rear of the apex of an equilateral triangle formed with left and right speakers.
Turntable
• Protect from vibrations and close dust cover whenever possible.
• Store records vertically and protect from dust and dirt.
Speaker System
• Installing compact speakers in this manner conserves room space.
• Rear and side panels of left and right speakers should be at the same condition.
(Placing with rear panel against a wall improves bass)
• Install speakers so that vibrations are not transferred directly to the floor.
(Employ stands or concrete blocks with bookshelf type speakers)
Carpet
Absorbs sound and vibrations.
(Placing in front of speakers also effective)

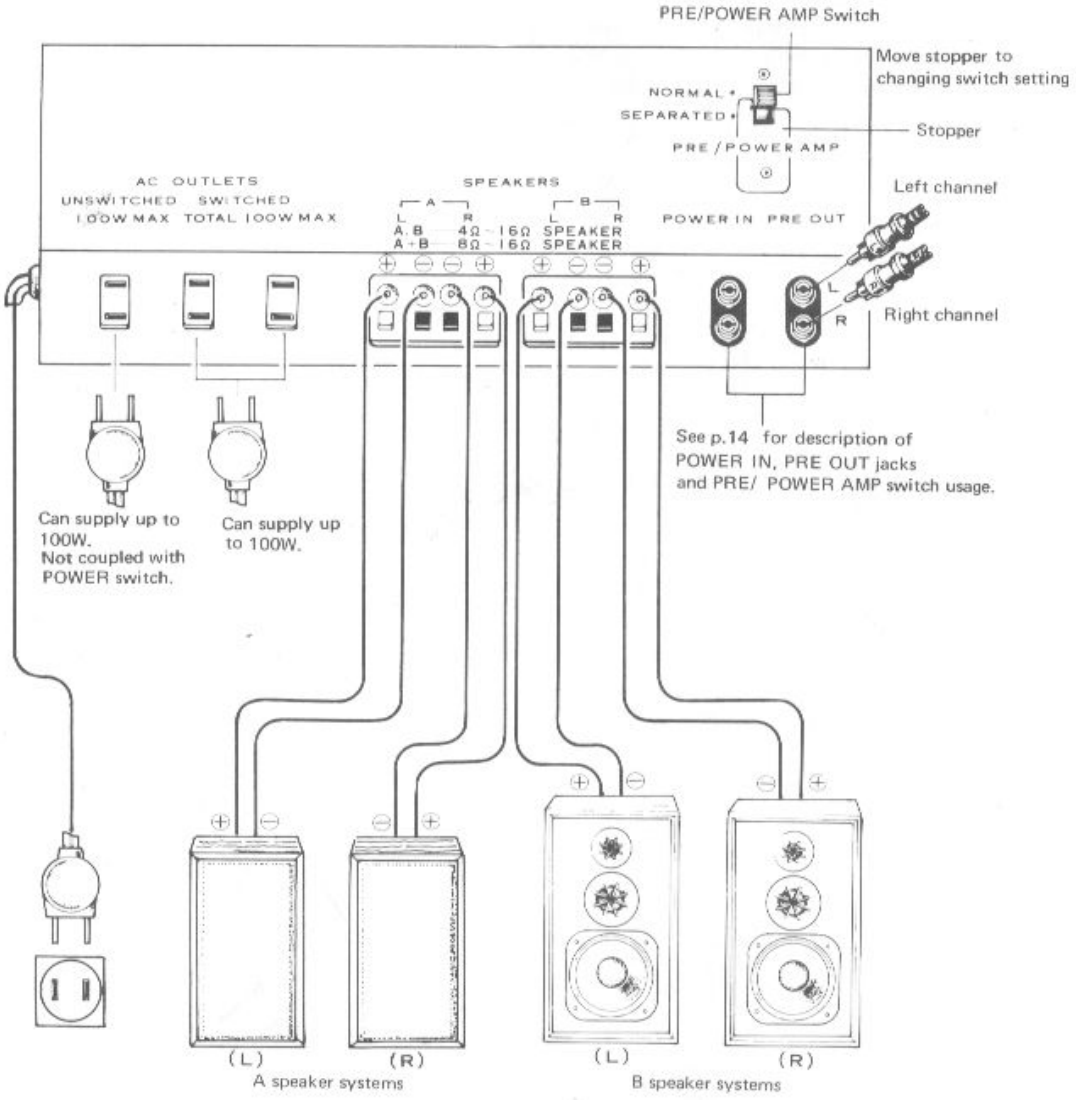
## SA-9900 APPLICATION EXAMPLE

• Multi-Amplifier System




• 2 turntables or a turntable with 2 tonearms can be connected to the SA-9900.

# CONNECTION DIAGRAM




## Cautions When Connecting

- Observe both the channels and polarities of the inputs and outputs of the components connected to the SA-9900. Be sure to connect L to L, R to R, + to +, and − to −.
- Make all connections securely.
  Loose connections can cause absence of sound or noise.

Install covers on unused AC outlets, and input and output jacks.

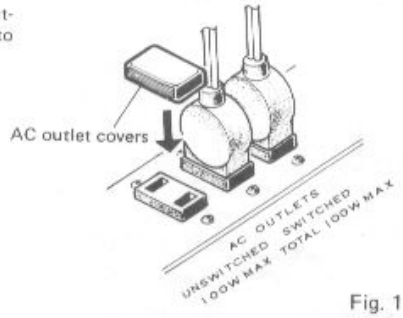



Fig. 1

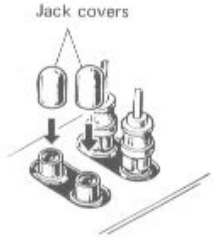
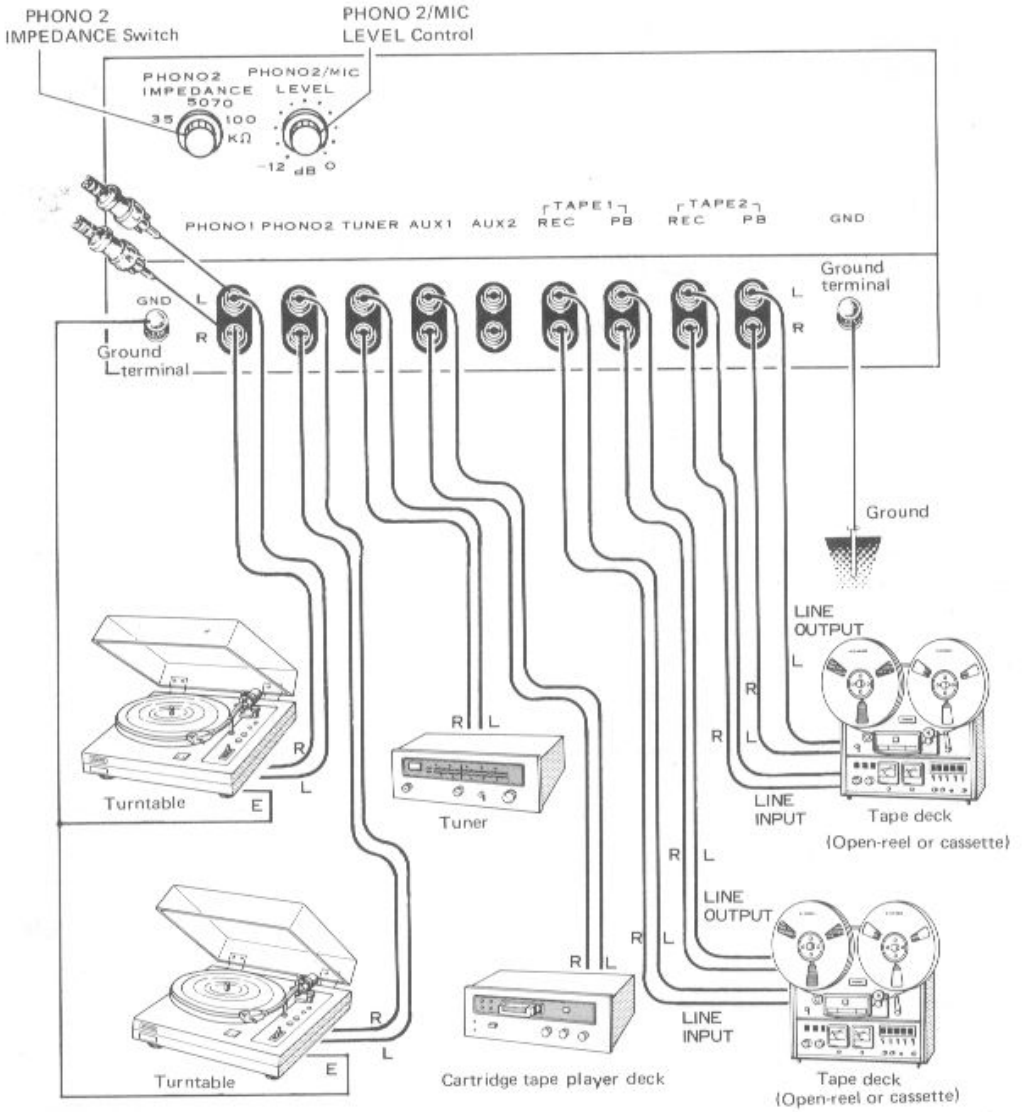



Fig. 2




Get connecting cords through lead wire guide.

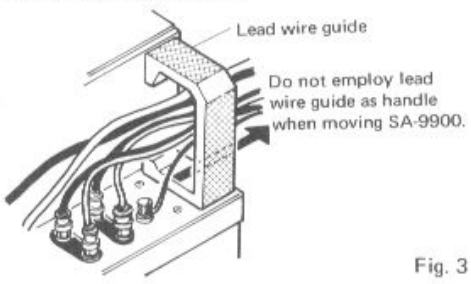
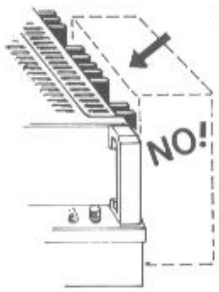



Fig. 3




Be sure to allow for adequate ventilation when installing.

Fig. 4

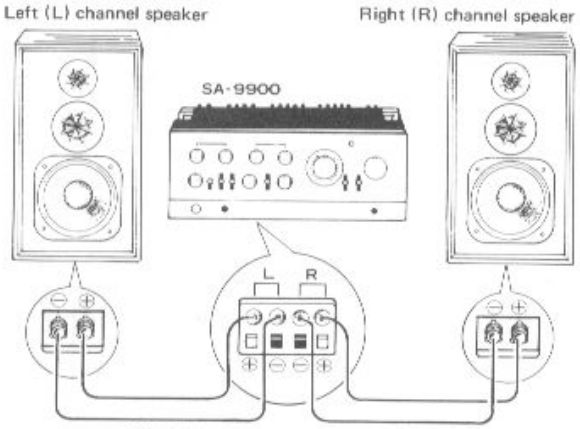
# CONNECTIONS

## SPEAKER SYSTEM

The SA-9900 is provided with 2 sets of speaker output terminals, A and B. Normally, connect a pair of speaker systems to the A terminals.

- As shown in Fig. 5, connect the right channel (as viewed from the front) speaker to the R terminals, and the left channel speaker to the L terminals.
- Observe plus (+: red) and minus (–: black) polarities of the output terminals and those of the speakers. When performing connections, use care to connect + to + and – to – of the speakers and the SA-9900 speaker terminals.

*NOTE:*
*If 2 sets of speaker systems (A & B) are to be simultaneously used, be sure that all speaker systems are 8Ω or more in impedance. Malfunction can be incurred if less than 8Ω speakers are employed.*

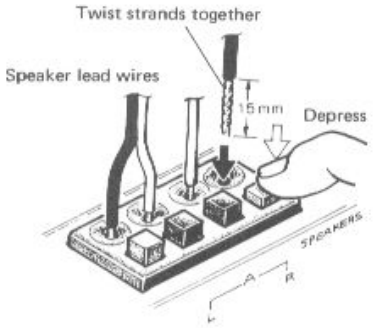



SPEAKER SYSTEM CONNECTION

Fig. 5

### Connecting Lead Wires to Speaker Terminals

1. Strip about 15mm (1/2") of the insulation from the end of lead wire.
2. If the conductor is stranded, twist the strands together to prevent spreading.
3. As shown in Fig. 6, depress the terminal button and insert the lead wire into the hole.
4. Release the button and confirm that the lead wire is secured in place.




SPEAKER LEAD WIRE CONNECTION

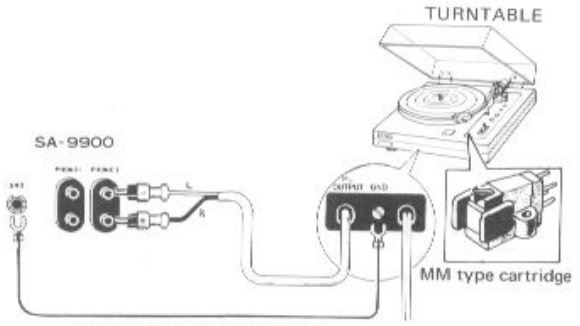
Fig. 6

## TURNTABLE

Connect turntable outputs to the PHONO 1 jacks, and ground wire to the GND terminal.

*NOTES:*
1. *A moving magnet (MM) type cartridge can be directly connected; however, a low output moving coil (MC) cartridge requires an accessory matching transformer or head amplifier.*
2. *A second turntable can be connected to the PHONO 2 jacks.*
3. *If the turntable is equipped with 2 tonearms, connect one tonearm to the PHONO 1 jacks and the other to the PHONO 2 jacks.*

- The PHONO 2 jacks are provided with a LEVEL control for adjustment of the input level and an IMPEDANCE selector switch for switching of the input impedance (35, 50, 70, 100 kΩ). Operation of these features is described on p.13.




TURNTABLE CONNECTION

Fig. 7

## TUNER

Connect an AM/FM stereo tuner to the TUNER jacks.

## AUX 1 & 2 TERMINALS

These jacks are for auxiliary inputs. They can be used to connect a cartridge tape player deck, second tuner, or other source.

## TAPE DECK (OPEN REEL OR CASSETTE)

The SA-9900 is provided with 2 sets of recording (TAPE 1 & 2 REC) and playback (TAPE 1 & 2 PB) jacks. Connect as follows:

### Recording Connections

Connect the tape deck playback terminals (LINE OUTPUT) with the TAPE 1 PB jacks.

### Playback Connections

Connect the tape deck playback terminals (LINE OUTPUT) with TAPE 1 PB jacks.

*NOTE:*

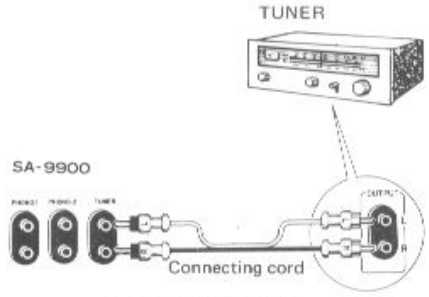
1. *Connect a second tape deck to the TAPE 2 (REC & PB) jacks.*
2. *Employ connecting cords supplied with tape deck.*

### Using AC Outlets

These can be used to supply AC power to other components, such as tuner, turntable, tape deck, etc.

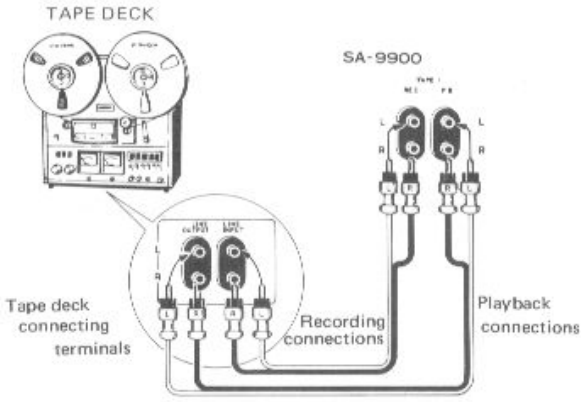
SWITCHED: AC power to component plugged into this outlet is coupled with the SA-9900 POWER switch setting. Maximum 100W total.

UNSWITCHED: AC power always present at this outlet, regardless of POWER switch setting. Maximum 100W.




TUNER CONNECTION

Fig. 8




TAPE DECK CONNECTION

Fig. 9

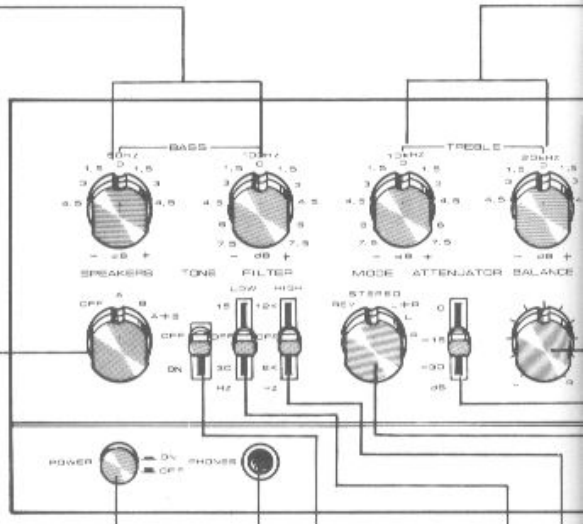
# FRONT PANEL FACILITIES

## BASS TWIN CONTROL

Adjusts low frequency tone.

100Hz: Adjusts frequence band below 400Hz. Control effectiveness at 100Hz is ±7.5dB.

50Hz: Provides additional control to the 100Hz knob for the frequency band below 200Hz. Control effectiveness at 50Hz is ±4.5dB.




## SPEAKERS SWITCH

OFF: Cuts off speaker sound (when using headphones only).

A: Sound obtained from speakers connected to A speaker terminals.

B: Sound obtained from speakers connected to B speaker terminals.

A + B: Sound obtained from speakers connected to both A and B speaker terminals.

## POWER SWITCH

Depress to turn on AC power.

After the POWER switch is set to ON, a few seconds will elapse before sound is obtained. This is due to the built-in muting circuit and does not signify difficulty.

## PHONES JACK

Output jack for stereo headphones.

## TONE SWITCH

When set to OFF, the TONE control circuit is disengaged and frequency response becomes flat. The BASS and TREBLE twin controls do not function at this time.

Convenient for checking phono cartridge and speaker tone, tone control effectiveness, and listening room acoustics.

## LOW FILTER SWITCH

Attenuates low frequency noise.

15Hz: Provides 12dB/octave attenuation for frequencies below 15Hz.

OFF: Set to this position when not employing filter.

30Hz: Provides 12dB/octave attenuation for frequencies below 30Hz.

## HIGH FILTER SWITCH

Attenuates high frequency noise, such as scratches and tape hiss.

12kHz: Provides 12dB/octave attenuation for frequencies above 12kHz.

OFF: Set to this position when not employing filter.

8kHz: Provides 12dB/octave attenuation for frequencies above 8kHz.

## TREBLE TWIN CONTROL

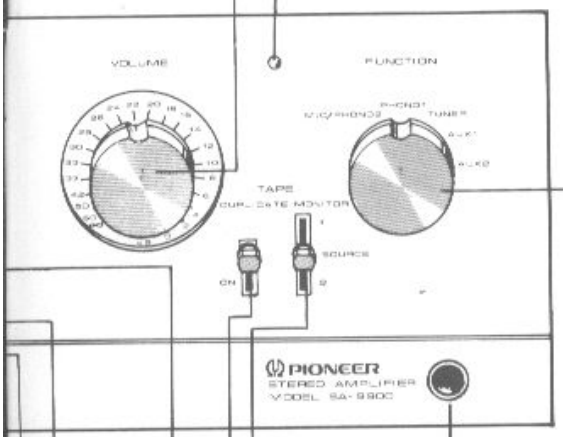
Adjusts high frequency tone.

10kHz: Adjusts frequency band above 2.5kHz. Control effectiveness at 10kHz is ±7.5dB.

20kHz: Provides additional control to the 10kHz knob for the frequency band above 5kHz. Control effectiveness at 20kHz is ± 4.5dB.

## VOLUME CONTROL

Adjusts output level to speakers and headphones. Scale is graduated in dB with 0dB at maximum level. When employed in combination with the ATTENUATOR switch, finer and wider range attenuation can be performed. See additional description on p.13.




## PILOT LAMP

Lights when AC power is turned on.

## FUNCTION SWITCH

PHONO 1: For playing records on a turntable connected to the PHONO 1 jacks.

MIC/PHONO 2: Same as above, for PHONO 2 jacks, or for reproduction through a microphone connected to the MIC jack on the front panel. Note, when the microphone is connected to the jack, the turntable connected to the PHONO 2 jacks cannot be used.

TUNER: For listening to broadcasts through the tuner.

AUX 1: For playing signals fed to the AUX 1 jacks.

AUX 2: Same as above, for AUX 2 jacks.

## MIC JACK

Accepts the plug of the microphone.

## TAPE MONITOR SWITCH

1: Playback or monitoring of tape deck connected to the TAPE 1 (REC & PB) jacks.

SOURCE: Set to this position at times other than tape playback.

2: Playback or monitoring of tape deck connected to the TAPE 2 (REC & PB) jacks.

## ATTENUATOR SWITCH

Attenuates the output level as follows:

0dB: No attenuation

-15dB: Attenuates by 15dB

-30dB: Attenuates by 30dB

## MODE SWITCH

REV: Reverses left and right channel stereo signals.

STEREO: Normal stereo reproduction.

L + R: Mixes left and right channel signals for mono reproduction.

L: Mono reproduction of left channel signal through both speakers.

R: Mono reproduction of right channel signal through both speakers.

## TAPE DUPLICATE SWITCH

Set to ON when employing 2 tape decks to duplicate or edit tapes. Be sure to set to OFF (upper position) at other times.

## BALANCE CONTROL

Adjusts left and right volume balance of speakers and headphones. Turn clockwise from center to increase right channel (R) volume, and counterclockwise from center to increase left channel (L) volume.

# BEFORE OPERATION

Before setting the POWER switch to ON, set the other controls and switches as follows:

- VOLUME control to ∞ (minimum)
- ATTENUATOR switch to 0dB
- TAPE MONITOR switch to SOURCE
- TAPE DUPLICATE switch to upper position (OFF)
- MODE switch to STEREO
- TONE switch to OFF
- LOW & HIGH FILTER switches to OFF
- BASS & TREBLE controls to 0 (center position)
- SPEAKERS switch to A or B according to employed speaker terminals (A or B). Now you can switch your POWER switch ON.

# OPERATION

## PLAYING RECORDS

1. Set the FUNCTION switch to PHONO 1 if the turntable is connected to the PHONO 1 jacks, and to MIC/PHONO 2 if it is connected to the PHONO 2 jacks.
   Note, however, that the turntable connected to the PHONO 2 jacks cannot be used if the microphone is plugged into the MIC jack.
2. Play record on turntable.
3. Adjust the VOLUME, BASS and TREBLE controls for desired volume and tone.

### Notes

- Lower the tonearm gently onto the record. Temporarily setting the ATTENUATOR switch to -30dB will reduce noise incurred at this time.
- Do not turn off the power while the stylus is in contact with the record.
- Avoid imparting vibration to the turntable while a record is being played. This may cause the stylus to jump and possibly damage the record.
- Howling may be caused if the turntable is too close to the speaker systems. Allow for adequate spacing when installing.

*NOTE:*
*The PHONO 2 jacks are provided with an input PHONO 2 / MIC LEVEL control and an IMPEDANCE switch. Their operation is described on p.13.*

## EMPLOYING TUNER (AM or FM Reception)

1. Set the FUNCTION switch to TUNER.
2. Tune in desired station on tuner.
3. Adjust VOLUME, BASS & TREBLE controls for desired volume and tone.

## USING THE MICROPHONE

1. Connect the microphone to the MIC jack.
2. Set the FUNCTION switch to MIC/PHONO 2
3. Adjust the sound level by turning the VOLUME control to the right little by little.

*NOTES:*

- *You should use a high impedance (above 20kΩ) dynamic type microphone with a standard 6mm diameter phone plug. Pioneer puts on the market a wide variety of high performance microphone for you selection.*
- *Under certain conditions of use, a microphone gives rise to howling or feedback noise. Take care not to raise the volume too high when the microphone is close to the speaker system or in a room with a great deal of resonance. Microphone will perform most effectively with TREBLE and BASS controls at their midway positions.*
- *While using the microphone, only microphone sound will be heard through the left and right speakers.*

## EMPLOYING AUX COMPONENTS

Auxiliary components, such as a cartridge tape player deck, can be connected to the AUX 1 & 2 jacks.

1. Set the FUNCTION switch to AUX 1 to play a component connected to the AUX 1 jacks, and to AUX 2 to play a component connected to the AUX 2 jacks.
2. Operate component.
3. Adjust VOLUME, BASS & TREBLE controls for desired volume and tone.

### Protection Circuit

- After turning on the power of the SA-9900, 6 ~ 8 seconds will elapse before sound is obtained from the speakers. This is due to the operation of the built-in protection and muting circuit. It serves to both prevent switching noise when the power is turned on and off, and protect the speakers in event DC occurs in the output.
- Operation of the internal relay during playing will cause continuous a clicking noise.
  This would most likely be caused by speaker terminal shorting or overload (used speaker impedance less than 4Ω). The protection circuit functions automatically in this type of case to disconnect the speaker terminals and safeguard the transistors and speakers. The circuit is self-resetting and after the cause of trouble has been corrected, it will return to normal condition.

# EMPLOYING TAPE DECK

## TAPE PLAYBACK

1. Set the TAPE MONITOR switch to 1 if the tape deck is connected to the TAPE 1 jacks, and to 2 if it is connected to the TAPE 2 jacks.
2. Play tape on tape deck.
3. Adjust VOLUME, BASS & TREBLE controls for desired volume and tone.

*NOTES:*
*1. Be sure to set the TAPE MONITOR switch to SOURCE when not playing tape.*
*2. FUNCTION switch setting is irrelevant when playing tape.*

## TAPE RECORDING

1. Set FUNCTION switch to the source to be recorded (PHONO, TUNER, etc.).
2. Operate program source.
3. Adjust recording levels with the controls of the tape deck and proceed with recording.

*NOTE:*
*Set DUPLICATE switch to OFF during recording.*

### Monitoring Recording Conditions

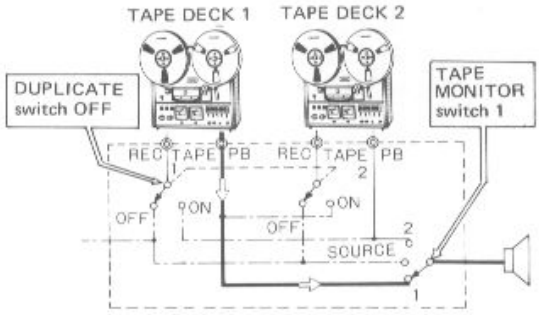
If the tape deck is a 3-head type recording conditions can be monitored through the speakers by setting the TAPE MONITOR switch to 1 (or 2). Both recording and playback connections must be performed in this case.

## TAPE DUPLICATION & EDITING

By employing 2 tape decks, the desired material only from a previously recorded tape can be edited onto a second tape. A personal tape library can be compiled in this manner.

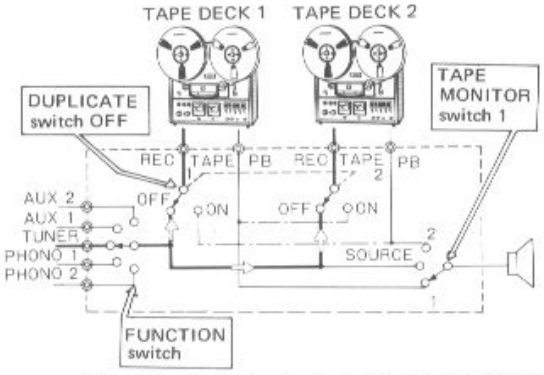
1. Connect 2 tape decks as shown Fig.12.
2. Set the TAPE DUPLICATE switch to ON.
3. On one tape deck (1 or 2) playback the pre-recorded tape, and perform recording with the other deck.

- Duplication is performed while monitoring the recording. Set the TAPE MONITOR switch to 1 (or 2) according to the deck being used for recording 1 (or 2).



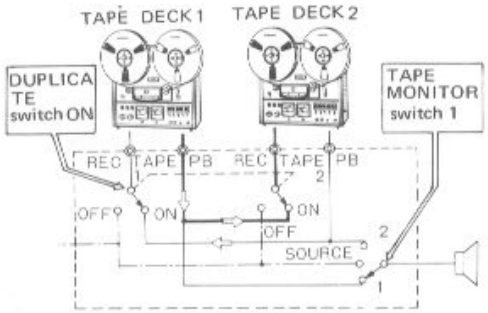

**Tape playback:** Playback signal enters TAPE 1 (or 2) PB jacks, passes through TAPE MONITOR switch 1 (or 2) and is heard from the speakers.

Fig. 10




**Tape recording:** The input signal selected by the FUNCTION switch is always present at a fixed level at the TAPE 1 & 2 REC jacks. Monitoring can be performed at this time by setting the TAPE MONITOR switch to 1 or 2, according to the TAPE jacks being used for recording.

Fig. 11



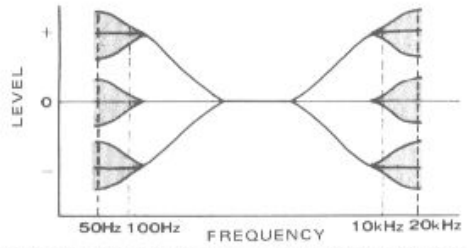

**Duplication:** Playback signal from tape deck 1 in the figure enters via TAPE 1 PB jacks, passes through DUPLICATE switch ON, and is recorded by tape deck 2. This can also be performed in reverse, ie: playback with tape deck 2 and record with tape deck 1.

Fig. 12

# EFFECTIVE OPERATION

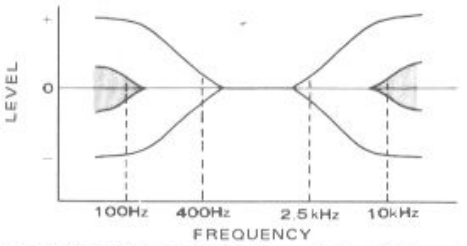
## BASS & TREBLE TWIN TONE CONTROLS

The twin control system is comprised of main and sub controls. Using the main controls only will adjust the audio tone in the same manner as conventional tone controls. On the other hand, employing only the sub controls provides the same function as changing the turnover frequency. Combined use of main and sub controls allows approximately 5900 tonal shades to be obtained.




Adjusting the main control, then the sub control can provide the adjustment shown in the shaded areas of Fig. 13.

Fig. 13

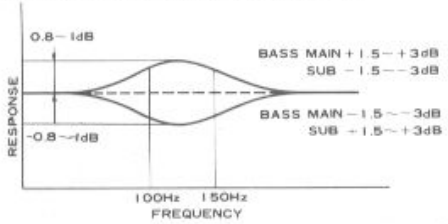



With the main BASS and TREBLE controls at 0dB, sub control ranges become as indicated by the shaded areas of Fig. 14.

Fig. 14

### Typical Application

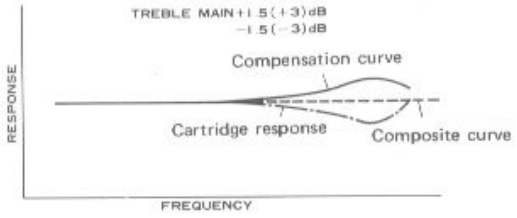
- BASS: Adjusting the BASS controls as shown in Fig. 15 can exert a trimming effect to the 100Hz ~ 150Hz region by enhancing it in the range of 0.8 ~ 1.0dB. This will add a slight body to the low frequencies while retaining the overall flat feeling. The opposite effect can also be achieved to improve unnatural low frequencies such as encountered in metal framed buildings where 100Hz ~ 150Hz standing waves or prolonged resonance are liable to occur.




To impart a delicate body to low frequencies.

Fig. 15

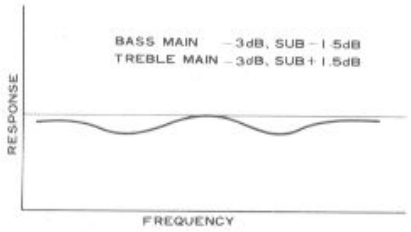
- TREBLE: Adjusting the TREBLE controls as shown in Fig. 16 can compensate for the tendency of moving magnet (MM) type cartridges to slacken at high frequencies. The twin controls slightly enhance the 8kHz ~ 10kHz region, while returning to flat response at higher frequencies to avoid unnatural peak boosting.




Compensation for high frequency slackening of cartridge.

Fig. 16

- MIDRANGE: Adjusting both BASS and TREBLE controls as shown in Fig. 17 has the effect of relatively enhancing the midrange. This setting is effective for providing an audio "close up" of a singer's voice, or a similar function.




Relatively enhancing the midrange.

Fig. 17

Setting the TONE switch to OFF provides a completely flat response regardless of the tone control settings. The different uses of each source and the fine effect of the tone controls can be confirmed.

## USING THE PHONO 2/MIC LEVEL CONTROL

- The LEVEL control adjusts the input level (sensitivity) of the PHONO 2 jacks in the range from 2.5 to 10mV and the MIC jack in the range from 6mV to 24mV. For example, if a high output voltage cartridge is connected to the PHONO 2 jacks, the control can be used to match its level with that of the cartridge connected to the PHONO 1 jacks.

## USING THE PHONO 2 IMPEDANCE SWITCH

- Set the IMPEDANCE switch to 35, 50, 70, or 100kΩ according to the specified load resistance of the employed cartridge. Even with a 50kΩ cartridge, the frequency response can be changed as shown in Fig. 19 to provide the desired tone.

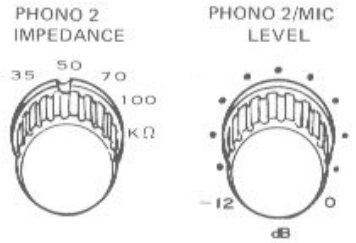
## VOLUME CONTROL & ATTENUATOR SWITCH

- By combining the direct reading dB VOLUME control and ATTENUATOR switch, 56 varieties of volumes (attenuations) can be accurately obtained as shown in the table below. The attenuation amount becomes the sum of both settings.
- The ATTENUATOR switch can be used to briefly lower the volume when changing records or tapes.

Attenuation amounts obtainable by combining the VOLUME control and ATTENUATOR switch.

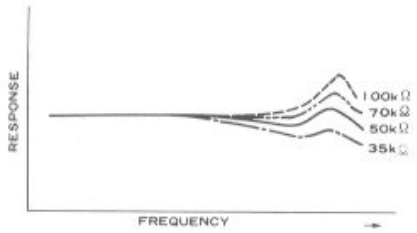
| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 15 | 16 | 17 |
| 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 |
| 40 | 41 | 42 | 43 | 44 | 45 | 46 | 48 | 50 | 52 | 54 |
| 56 | 57 | 58 | 60 | 63 | 65 | 67 | 72 | 75 | 80 | 90 |
| ∞ | | | | | | | | | | |

in-dB



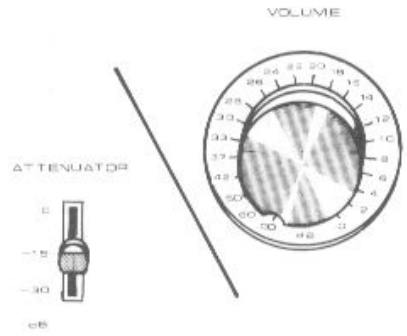

IMPEDANCE switch and LEVEL control of PHONO 2 jacks.

Fig. 18




Cartridge frequency response graph according to impedance setting.

Fig. 19



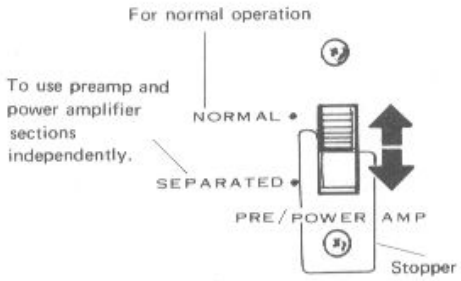

ATTENUATOR switch and VOLUME control.

Fig.20

# EMPLOYING PRE OUT & POWER IN JACKS

## USING PREAMP & POWER AMP SECTIONS INDEPENDENTLY

Setting the PRE/POWER AMP switch to SEPARATED allows the preamp and power amp sections to be employed independently. For example, using only the preamp section of the SA-9900, another external power amplifier can be employed. By switching between the external and SA-9900 self-contained power amplifiers, comparison listening can be performed.




Switch for separating preamp and power amplifier sections.

Fig. 21

### Multi-amplifier System Composition

With the PRE/POWER AMP switch set to SEPARATED, a separately sold electronic crossover network and one or more power amplifiers can be combined to form a multi-amp system. The audio frequency band is then divided into segments, with each range amplified by its own power amplifier. Improvements can be noted in such factors as intermodulation distortion, etc.

Composing 2 way Multi-amplifier System.

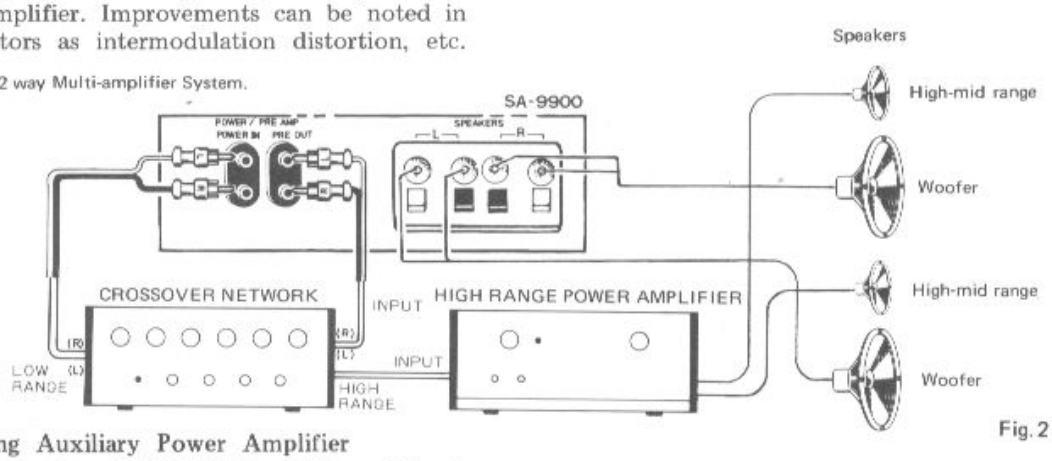



Fig. 22

### Employing Auxiliary Power Amplifier

By setting the PRE/POWER AMP switch to NORMAL, a separately sold power amplifier can be connected as shown in the figure. This arrangement is suitable in situations such as a large auditorium where the SA-9900 built-in power amplifier alone would be insufficient.

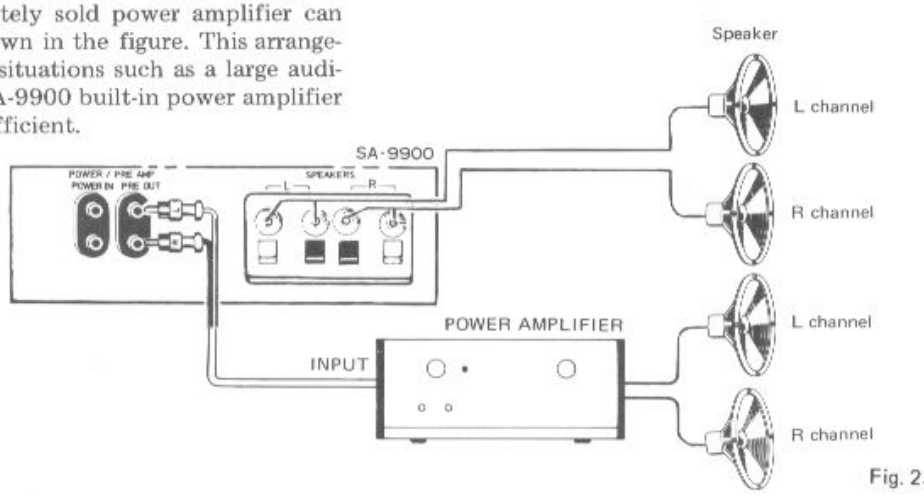



Fig. 23

# SPECIFICATIONS

### Semiconductors

| | |
|---|---|
| FET(s) | 10 |
| Transistors | 74 |
| Diodes | 33 |

### Power Amplifier Section

Circuitry: 2-stage differential amplifiers. 3-stage Darlington parallel push-pull, pure-complementary OCL.

**110 watts* per channel min, RMS at 8 ohms from 20Hz to 20kHz with no more than 0.1% total harmonic distortion.**

| | | |
|---|---|---|
| Continuous Power Output | | |
| 20Hz~20kHz | | |
| | (Both channels driven) | 110W +110W (8Ω) |
| | | 110W + 110W (4Ω) |
| 1kHz | (Both channels driven) | 120W + 120W (8Ω) |
| | | 120W + 120W (4Ω) |
| Total Harmonic Distortion (20Hz~20kHz) | | |
| (Continuous Power Output) | | Less than 0.1% |
| (55W Power Output, 8Ω) | | Less than 0.04% |
| (1W Power Output, 8Ω) | | Less than 0.04% |
| Intermodulation Distortion | | |
| (Continuous Power Output) | | Less than 0.1% |
| (55W Power Output, 8Ω) | | Less than 0.04% |
| (1W Power Output, 8Ω) | | Less than 0.04% |
| Power Bandwith Distortion | | |
| (IHF, Both channels driven) | | 5Hz~40kHz (T.H.D. 0.1%) |
| Frequency Response | | 10Hz~80kHz ± $^{0}_{3}$dB |
| Input Sensitivity/Impedance | | |
| (POWER AMP IN) | | 1V/50kΩ |
| Output: Speaker | | A, B (4Ω ~ 16Ω) |
| | | A + B (8Ω ~ 16Ω) |
| Headphone | | 4Ω ~ 16Ω |
| Damping Factor (20Hz ~ 20kHz, 8Ω) | | |
| | | More than 30 |
| Hum & Noise (IHF, Short-circuited, A Network) | | More than 110dB |

### Preamplifier Section

| | |
|---|---|
| Circuitry | |
| Equalizer amplifier | 3-stage direct-coupled class-A SEPP type with 1st stage FET equiped differential amplifier. |
| Control amplifier | 3-stage direct-coupled type with 1st stage FET equiped differential amplifier. |
| Input Sensitivity/Impedance | |
| PHONO 1 | 2.5mV/50kΩ |
| PHONO 2 | 2.5mV~10mV/35kΩ, 50kΩ, 70kΩ, 100kΩ |
| MIC | 6mV~24mV/85kΩ |
| TUNER | 150mV/50kΩ |
| AUX 1 | 150mV/50kΩ |
| AUX 2 | 150mV/50kΩ |
| TAPE PB 1 | 150mV/50kΩ |
| TAPE PB 2 | 150mV/50kΩ |
| PHONO Overload Level (T.H.D. 0.01%) | |
| PHONO 1 | 500mV (1kHz) |
| PHONO 2 | 500mV~1.0V (1kHz) |
| Output Level/Impedance | |
| TAPE REC 1 | 150mV |
| TAPE REC 2 | 150mV |
| PRE OUT | 2V/1kΩ |
| Harmonic Distortion (20Hz~20kHz) | |
| | Less than 0.05% |
| Frequency Response | |
| PHONO (RIAA equalization) | 30Hz~15kHz ±0.2dB |
| TUNER, AUX, TAPE PB | 7Hz~40kHz $^{+1}_{-3}$ dB |
| Tone Control (1.5dB step) | |
| BASS | SUB ±4.5dB (50Hz) |
| | MAIN ±7.5dB (100Hz) |
| TREBLE | SUB ±4.5dB (20kHz) |
| | MAIN ±7.5dB (10kHz) |
| Filter | |
| LOW | 15Hz, 30Hz (12dB/oct.) |
| HIGH | 8kHz, 12kHz (12dB/oct.) |
| Hum & Noise (IHF, Short circuited, A Network) | |
| PHONO 1 & 2 | More than 70dB |
| MIC | More than 65dB |
| TUNER, AUX 1 & 2, TAPE PB 1 & 2 | |
| | More than 95dB |
| Attenuator | 0, −15dB, −30dB |

### Miscellaneous

| | | |
|---|---|---|
| Power Requirements | | AC 120V, 60Hz |
| Power Consumption | | 500W |
| AC Outlets | | 2 (Switched), 1 (Unswitched) |
| Dimensions | | 420 (W) x 165 (H) x 403 (D) mm |
| | | 16-1/2 x 6-1/2 x 15-7/8 in. |
| Weight: | Without Package | 20kg (44 lb 1 oz) |
| | With package | 22.4kg (49 lb 6 oz) |

### Furnished Parts

| | |
|---|---|
| Hex. Wrench (used for fasting VOLUME knob) | 1 |
| Factory Tested Data | 1 |
| Operating Instructions | 1 |

* Measured pursuant to Federal Trade Commission's Trade Regulation rule on Power Output Claims for Amplifiers.

*NOTE:*
*Specifications and the design subject to possible modification without notice due to improvements.*

PIONEER

# CONDITIONS FREQUENTLY MISTAKEN FOR MALFUNCTION

If you think that there is a defect, please check the following steps.
If this does not help, please inform your Pioneer Authorized Service Center about product name and symptoms.

1. No sound
- No power (pilot lamp not lit)
  Is the power switch on? — Is the power cord plugged in? — Is the wall receptacle live?
- Nothing can be heard
  PRE/POWER AMP switch position? — SPEAKER switch? — TAPE MONITOR DUPLICATE switch? — VOLUME knob, ATTENUATOR?
- Records can not be heard
  Does the FUNCTION switch position correspond with the PHONO terminals? — Turntable connection?
- Radio (FM, AM) can not be heard
  FUNCTION switch position? — Tuner connection? — Error in the tuner operation?
- Tape playback can not be heard
  Do tape deck connection terminals and TAPE MONITOR switch operation connection? — Is the tape prerecorded? — Tape deck connection — Error in the playback operation?

2. Much noise
- Appearing when listening to records
  Are there scratches or dust on the record? — Is the earth wire connected? — Is there influence from other equipment (amateur radio, neon lights, etc.)?
- Appearing with playback of tape
  Is the noise recorded on the tape? — Is the earth wire connected? — Check the tape deck.

3. Much distortion
- Appearing when listening to records
  Is there dust or dirt on the stylus? — Is the stylus worn? — Is the stylus pressure correct? — Is there howling because of vibrations transmitted to the turntable?
- Appearing with playback of tape
  Is the output level of the deck correct? — Is the distortion recorded on the tape? — Check the tape deck

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